Ministry of Higher Education and Scientific Research
Supervision and Scientific Evaluation Authority
Department of Quality Assurance and Academic Accreditation

Academic Program Description Form for Colleges and Institutes
Academic Year

University: Shatt Al-Arab
College/Institute: Engineering
Scientific Department: Civil
Date of Form Completion: 01/09/2024

Signature
Name of Head of Department:

Asst. Lecturer Nabeel Najm Abdullah

Signature

Name of Scientific Assistant: Dr. Jawad Kadhim

Reviewed by:
Quality Assurance and University Performance Division
Name of Division Director: Dr. Jasem Mohsen Yasser

Signature:

الدكتور
جاسم محسن ياسر
Dr.Jasim Al-Battat

Dean's Approval

أ.م.د.احسان قاسم محمد
عميد كلية الهندسة

MODULE DESCRIPTION FORM

نموذج وصف المادة الدراسية

Module Information معلومات المادة الدراسية					
Module Title	**Strength of Material I**			**Module Delivery**	
Module Type	**Core**			☐ **Theory** ☑ **Lecture** ☐ **Lab** ☐ **Tutorial** ☐ **Practical** ☐ **Seminar**	
Module Code	**CE213**				
ECTS Credits	**5**				
SWL (hr/sem)	**75**				
Module Level	2		**Semester of Delivery**	1,2	
Administering Department	Type Dept. Code		**College**	Type College Code	
Module Leader	Jasim Mohsin		**e-mail**		
Module Leader's Acad. Title	Lecturer		**Module Leader's Qualification**	PH.D.	
Module Tutor	Name (if available)		**e-mail**	E-mail	
Peer Reviewer Name	Name		**e-mail**	E-mail	
Scientific Committee Approval Date	01/09/2024		**Version Number**	1.0	

Relation with other Modules العلاقة مع المواد الدراسية الأخرى

Prerequisite module	Engineering Mechanics (Static)	**Semester**	
Co-requisites module	None	**Semester**	

Module Aims, Learning Outcomes and Indicative Contents
أهداف المادة الدراسية ونتائج التعلم والمحتويات الارشادية

Module Aims أهداف المادة الدراسية	The objective of this course is elaborate on the knowledge of engineering mechanics (statics) and to teach the students the purpose of studying strength of materials with respect to civil engineering design and analysis. The course introduces the students to the concepts of engineering mechanics of materials and the behavior of the materials and structures under applied loads
Module Learning Outcomes مخرجات التعلم للمادة الدراسية	Apply the knowledge of fundamental sciences mainly mathematics and physics to identify, formulate and solve civil engineering problems including stress, strain and deflection calculations as well as calculating axial force, shear and bending moment diagrams used in civil engineering analysis and design
Indicative Contents المحتويات الإرشادية	The objectives of CE213, Strength of Materials, are to learn the principles of mechanics applied to different materials [III] and to develop problem solving skills through application of these principles to basic engineering problems. Specific topics covered in this class include: behavior of axially loaded members; torsion of circular shafts; stresses and deflections in beams; connectors in built-up beams; stress transformation under rotation of axes; principal stresses; triaxial stress and maximum shear stress; pressure vessels; and buckling behavior of columns. The course will rely on students' prerequisite knowledge of mathematics and basic science [II] in developing principles and analytical techniques of mechanics of materials.

Learning and Teaching Strategies
استراتيجيات التعلم والتعليم

Strategies	This module will be delivered with a strategy that encourage students' to participate in the discussion, exercises solving, and at the same time refining and expanding their critical thinking skills. This will be achieved through classes, interactive tutorials and by considering type of simple projects involving some sampling activities that are interesting to the students.

Student Workload (SWL) الحمل الدراسي للطالب محسوب لـ 15 اسبوعا			
Structured SWL (h/sem) الحمل الدراسي المنتظم للطالب خلال الفصل	128	**Structured SWL (h/w)** الحمل الدراسي المنتظم للطالب اسبوعيا	9
Unstructured SWL (h/sem) الحمل الدراسي غير المنتظم للطالب خلال الفصل	97	**Unstructured SWL (h/w)** الحمل الدراسي غير المنتظم للطالب اسبوعيا	6.46
Total SWL (h/sem) الحمل الدراسي الكلي للطالب خلال الفصل	225		

Module Evaluation تقييم المادة الدراسية					
		Time/Number	**Weight (Marks)**	**Week Due**	**Relevant Learning Outcome**
Formative assessment	**Quizzes**	2	10% (10)	5, 10	LO #1, 2, 10 and 11
	Assignments	2	10% (10)	2,12	LO # 3, 4, 6 and 7
	Projects / Lab.	1	10% (10)	continuous	
	Report	1	10% (10)	13	LO # 5, 8 and 10
Summative assessment	**Midterm Exam**	2 hr	10% (10)	7	LO # 1-7
	Final Exam	2hr	50% (50)	16	All
Total assessment			100% (100 Marks)		

Delivery Plan (Weekly Syllabus) المنهاج الاسبوعي النظري	
	Material Covered
Week 1	Introduction and review of statics – equilibrium.
Week 2	Simple stresses and strains
Week 3	Mechanical properties of materials
Week 4	Axial load and deformation on axial load
Week 5	Thermal stresses and strains
Week 6	Thin walled cylinder
Week 7	Torsion-calculation of simple torsion for circular shafts.
Week 8	Plan Stress Analysis (Two Dimensional Stress Analysis)

Week 9	Shearing Forces and Bending Moments in Beams
Week 10	Shear force and bending moment diagrams.
Week 11	Bending stress in Beams
Week 12	Shearing stress in beams
Week 13	Deflection of Beams-Integration Method
Week 14	Deflection of Beams-Singularity Method
Week 15	Buckling of Columns.
Week 16	**Preparatory week before the final Exam**

Delivery Plan (Weekly Lab. Syllabus) المنهاج الاسبوعي للمختبر	
	Material Covered
Week 1	
Week 2	
Week 3	
Week 4	
Week 5	
Week 6	
Week 7	

Learning and Teaching Resources مصادر التعلم والتدريس		
	Text	**Available in the Library?**
Required Texts	Mechanics of Materials-Andrew Pytel	No
Recommended Texts	Strength of Materials-Ferdinand L.Singer	No
Websites	https://www.coursera.org/courses?query=mechanics%20of%20materials	

Grading Scheme مخطط الدرجات				
Group	**Grade**	التقدير	**Marks (%)**	**Definition**

Success Group (50 - 100)	**A -** Excellent	امتاز	90 - 100	Outstanding Performance
	B - Very Good	جـد جدا	80 - 89	Above average with some errors
	C - Good	جـد	70 - 79	Sound work with notable errors
	D - Satisfactory	متوسط	60 - 69	Fair but with major shortcomings
	E - Sufficient	مقبول	50 - 59	Work meets minimum criteria
Fail Group (0 – 49)	**FX –** Fail	راسب (قد المعالجة)	(45-49)	More work required but credit awarded
	F – Fail	راسب	(0-44)	Considerable amount of work required
